

AMENDMENTS TO THE CLAIMS

Please amend claims 1-2, 9, 12, 25, 28-29, 33-37, 43, 46-47, 49, 52-55, 59, and 63-66 and add claims 67-71 as indicated among the following complete set of pending claims:

Claim 1. (Currently amended) A reconfigurable ball bat comprising:

a center tube including a handle portion;

a barrel assembly comprising:

a transition piece;

an end cap;

a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel; and

wherein:

the barrel assembly is removably supported as a unit on the center tube by the transition piece and the end cap; and

the transition piece forms a smooth, generally continuous radially outwardly facing surface together with at least a portion of the barrel.

Claim 2. (Currently amended) A reconfigurable ball bat comprising:

a center tube including a handle portion;

[[The reconfigurable ball bat of claim 1, further comprising:]]

an end plug having a body in a form of a shaft and a head connected to the body;

the body fixed in a distal end of the center tube; [[and]]

the head protruding from the distal end of the center tube and engaged with the end cap; and [[.]]

a barrel assembly comprising:

a transition piece;

an end cap; and

a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel;

wherein the barrel assembly is removably supported as a unit on the center tube by the transition piece and the end cap.

Claim 3. (Original) The reconfigurable ball bat of claim 2, further comprising:

an elongate slot in the end cap;

the head having an elongate configuration; and

wherein the head fits into the slot in an interlocking relation.

Claim 4. (Original) The reconfigurable ball bat of claim 3, further comprising at least one anti-rotation fitting inserted in the elongate slot and holding the head in the interlocked relation against rotation.

Claim 5. (Original) The reconfiguration ball bat of claim 4, wherein the at least one anti-rotation fitting is held in the elongate slot by a set screw engaging the anti-rotation fitting and the end plug.

Claim 6. (Original) The reconfigurable ball bat of claim 2, further comprising:

an opening in the end cap for receiving the center tube therethrough;

wherein the head of the end plug is larger than the opening in the end cap and cannot pass through the end cap so that the end cap is mounted on the center tube by passing the end cap over a proximal end of the center tube with a knob removed.

Claim 7. (Original) The reconfigurable ball bat of claim 6, further comprising:

a threaded element on the center tube;

a nut for engagement with the threaded element;

wherein the barrel assembly including the end cap is passed over the proximal end of the center tube and moved distally until the end cap engages the head of the end plug;

the barrel assembly is held in place on the center tube by the nut after the barrel assembly and the nut have been moved distally over the center tube.

Claim 8. (Original) The reconfigurable ball bat of claim 6, wherein the head further comprises a non-circular structure engaged with structure in the end cap to prevent relative rotational movement between the end cap and the end plug.

Claim 9. (Currently amended) A reconfigurable ball bat comprising:

a barrel assembly comprising:

a transition piece;

an end cap;

a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel; and

[[The reconfigurable ball bat of claim 1 further comprising]] a ballast supported on[[at least one of]] the end cap and the transition piece.

Claim 10. (Original) The reconfigurable ball bat of claim 9, wherein:

each of the end cap and transition piece has a engagement structure; and
the ballast engages the engagement structure on each of the end cap and the transition piece.

Claim 11. (Original) The reconfigurable ball bat of claim 1, further comprising a ballast, wherein the ballast is concentric with and is disposed within the barrel.

Claim 12. (Currently amended) The reconfigurable ball bat of claim[[10]]11, wherein:

the ballast has a tubular configuration; and
the ballast is disposed between the barrel and the center tube.

Claim 13. (Original) The reconfigurable ball bat of claim 1, wherein the barrel has an inner diameter of approximately two inches and an outer diameter of approximately two and a quarter inches.

Claim 14. (Original) The reconfigurable ball bat of claim 1, wherein the barrel comprises a thermoplastic material.

Claim 15. (Original) The reconfigurable ball bat of claim 14, wherein the barrel comprises a polycarbonate material.

Claim 16. (Original) The reconfigurable ball bat of claim 14, wherein the barrel comprises a polyurethane material.

Claim 17. (Original) The reconfigurable ball bat of claim 16, wherein the barrel comprises a reinforcing material.

Claim 18. (Original) The reconfigurable ball bat of claim 1, wherein the center tube has an inner diameter in a range from approximately .500 inch to approximately .715 inch.

Claim 19. (Original) The reconfigurable ball bat of claim 1, wherein the center tube has an outer diameter in a range from approximately .75 inch to approximately 1.00 inch.

Claim 20. (Original) The reconfigurable ball bat of claim 1, wherein the center tube comprises an aluminum material.

Claim 21. (Original) The reconfigurable ball bat of claim 1, wherein the center tube comprises a composite material.

Claim 22. (Original) The reconfigurable ball bat of claim 21, wherein the center tube comprises an aluminum inner portion and a reinforcing fiber outer layer.

Claim 23. (Original) The reconfigurable ball bat of claim 1, wherein the center tube comprises a thermoplastic material.

Claim 24. (Original) The reconfigurable ball bat of claim 1, wherein the center tube is fiber reinforced.

Claim 25. (Currently amended) A reconfigurable ball bat comprising:

a barrel assembly comprising:

a transition piece;

an end cap; and

a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel;

[[The reconfigurable ball bat of claim 1,]]

wherein:

the end cap and the transition piece have respective bearing surfaces each with[[
respective]] the same minimum diameter[[s]]; and

the barrel is a straight cylindrical barrel and engages each of the end cap and the transition piece at [[a]] the minimum diameter[[greater than or equal to the respective minimum diameters]].

Claim 26. (Original) The reconfigurable ball bat of claim 1, further comprising a ballast located interiorly of the barrel to provide a predetermined weight along a length of the barrel.

Claim 27. (Original) The reconfigurable ball bat of claim 26, wherein the ballast seals an inner surface of the barrel and surrounds the center tube.

Claim 28. (Currently amended) A reconfigurable ball bat comprising:

_____ a center tube including a handle portion;

_____ a barrel assembly comprising:

_____ a transition piece;

_____ an end cap; and

_____ a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel[[The reconfigurable ball bat of claim 1,]]

wherein:

_____ the barrel assembly is axially abutted at a distal end and axially abutted at a proximal end by structure on the center tube to clamp and hold the barrel assembly in position on the center tube; and

_____ the barrel assembly is removably mounted on the center tube and is removable as a unit.

Claim 29. (Currently amended) A reconfigurable ball bat comprising:

_____ a center tube including a handle portion;

_____ a barrel assembly comprising:

_____ a transition piece;

_____ an end cap; and

_____ a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel;

_____ wherein:

_____ the barrel assembly is removably supported as a unit on the center tube by the transition piece and the end cap;

_____ [[The reconfigurable ball bat of claim 1, wherein:]]

_____ the barrel assembly further comprises[[ing]] a ballast disposed within the barrel; and
_____ the ballast is a non-strengthening member for adding a predetermined weight so that the reconfigurable ball bat weighs less than or equal to 30 ounces.

Claim 30. (Original) The reconfigurable ball bat of claim 29 wherein the bat weighs less than or equal to 28 ounces.

Claim 31. (Original) The reconfigurable ball bat of claim 29, wherein the bat weighs less than or equal to 26 ounces.

Claim 32. (Original) The reconfigurable ball bat of claim 29, wherein the bat has a weight in a range from 22 ounces to 24 ounces.

Claim 33. (Currently amended) The reconfigurable ball bat of claim 29, wherein the bat[[meets the standards of the NCAA for ball bats]] has a weight in ounces equal to a length in inches minus at least three.

Claim 34. (Currently amended) The reconfigurable ball bat of claim 29, wherein the bat[[meets the standards of the ASA for ball bats]] has a transition forming a relatively smooth continuous surface including at least portions of the barrel section and the handle portion.

Claim 35. (Currently amended) A reconfigurable ball bat comprising:

_____ a center tube including a handle portion;

_____ a barrel assembly comprising:

_____ a transition piece;

_____ an end cap;

_____ a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel; and

_____ wherein:

_____ the barrel assembly is removably supported as a unit on the center tube by the transition piece and the end cap;[[The reconfigurable ball bat of claim 29, wherein:]]

the barrel assembly is a first barrel assembly; and

the ball bat further comprises at least one additional barrel assembly so that the ball bat includes a plurality of barrel assemblies that are selectively and removably mounted on the center tube.

Claim 36. (Currently amended) The reconfigurable ball bat of claim 35, wherein the plurality of barrel assemblies have a predetermined variety of weights[[or playability characteristics]].

Claim 37. (Currently amended) A reconfigurable ball bat comprising:

a barrel assembly comprising:

a transition piece;

an end cap; and

a barrel removably connected to the end cap at a distal end of the barrel, the barrel connected to the transition piece at a proximal end of the barrel;[[The reconfigurable ball bat of claim 1,]]

wherein the transition piece comprises two connectable concentric parts joined together.

Claim 38. (Original) The reconfigurable ball bat of claim 37, wherein the two parts comprise a generally frustoconical part and a radially extending part supporting the frustoconical part in a coaxial configuration relative to the center tube.

Claim 39. (Original) A reconfigurable ball bat kit, comprising:

a barrel assembly including:

a barrel;

an end cap adapted to be supported on the barrel;

a transition piece adapted to be supported on the barrel and removably supported on a handle portion of the ball bat; and

a ballast adapted to be supported on the end cap and on the transition piece inside the barrel.

Claim 40. (Original) The reconfigurable ball bat kit of claim 39, wherein the ballast is coaxial with the barrel in an assembled state.

Claim 41. (Original) The reconfigurable ball bat kit of claim 39, wherein the ballast has a predetermined weight.

Claim 42. (Original) The reconfigurable ball bat kit of claim 40, wherein:

the end cap has a distal engagement structure;

the transition piece has a proximal engagement structure, and

the ballast is supported at a distal end and at a proximal end by the distal engagement structure and the proximal engagement structure respectively in an assembled state.

Claim 43. (Currently amended) The reconfigurable ball bat kit of claim[[39]]42, wherein the ballast is fixed to each of the distal engagement structure and the proximal engagement structure.

Claim 44. (Original) The reconfigurable ball bat kit of claim 39, wherein the ballast is a thin film tubular member having a thickness in a range from ten to one hundred and twenty-five thousandths of an inch.

Claim 45. (Original) The reconfigurable ball bat kit of claim 39, wherein:

the barrel assembly is a first barrel assembly; and

the reconfigurable ball bat kit further comprising a plurality of barrel assemblies including the first barrel assembly.

Claim 46. (Currently amended) The reconfigurable ball bat kit of claim 45, wherein each of the plurality of barrel assemblies has a different weight[[and/or a different playability]] characteristic from at least another of the barrel assemblies.

Claim 47. (Currently amended) A reconfigurable ball bat kit, comprising:

a barrel assembly including:

a barrel;

an end cap adapted to be supported on the barrel; and

a transition piece adapted to be supported on the barrel and removably supported on a handle portion of the ball bat; [[The reconfigurable ball bat kit of claim 39,]]

wherein the transition piece comprises two connectable concentric parts adapted to be joined together.

Claim 48. (Original) The reconfigurable ball bat kit of claim 47, wherein the two parts comprise a generally frustoconical part and a radially extending part for supporting the frustoconical part in a coaxial configuration relative to the center tube.

Claim 49. (Currently amended) A method of using a reconfigurable ball bat, the bat having:

a center tube and a barrel assembly removably mounted on the center tube, the barrel assembly comprising a transition piece, an end cap, and a barrel; [[, and a ballast,]]

the method of using the reconfigurable ball bat comprising selecting the barrel assembly in accordance with a desired [[weight and/or]] playability of the barrel assembly.

Claim 50. (Original) The method of using of claim 49, wherein the ball bat comprises a plurality of barrel assemblies in which the barrel assembly is a first barrel assembly; the method of using further comprising selecting a barrel assembly from among the plurality of barrel assemblies based on a desired weight and playability.

Claim 51. (Original) The method of using of claim 50, further comprising a preliminary step of assembling at least one of the barrel assemblies.

Claim 52. (Currently amended) A method of using a reconfigurable ball bat, the bat having:
a center tube and a barrel assembly removably mounted on the center tube, the barrel
assembly comprising a transition piece, an end cap, and a barrel;
the method of using the reconfigurable ball bat comprising:
selecting the barrel assembly in accordance with a desired weight and/or
playability of the barrel assembly; and
[[The method of using of claim 49, further comprising]]supporting the barrel
assembly on the center tube.

Claim 53. (Currently amended) A method of using a reconfigurable ball bat, the bat having:
a center tube and a barrel assembly removably mounted on the center tube, the barrel
assembly comprising a transition piece, an end cap, and a barrel;
the method of using the reconfigurable ball bat comprising[[The method of using of
claim 52, further comprising]] inserting the central tube through the barrel assembly and
twisting the center tube relative to the barrel assembly.

Claim 54. (Currently amended) A method of using a reconfigurable ball bat, the bat having:
a center tube and a barrel assembly removably mounted on the center tube;
the method of using the reconfigurable ball bat comprising:
inserting the central tube through the barrel assembly and twisting the center tube
relative to the barrel assembly; [[The method of using of claim 53, further comprising:]]
inserting at least one anti-rotation fitting into the end cap; and
securing the anti-rotation fitting in the end cap by a set screw.

Claim 55. (Currently amended) A method of using a reconfigurable ball bat, the bat having:
a center tube and a barrel assembly;
the method of using the reconfigurable ball bat comprising[[The method of using of
claim 52, further comprising]]securing the barrel assembly on the center tube by engaging a
blocking nut on the center tube and abutting the transition piece with the nut.

Claim 56. (Original) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel;

connecting a proximal end of a ballast to an engagement structure of the transition piece;

connecting a distal end of the ballast to a engagement structure of an end cap;

and

connecting an end cap to a distal end of the barrel; and

supporting the barrel assembly on a center tube by inserting the center tube through the transition piece, the ballast, and the end cap.

Claim 57. (Original) The method of claim 56, wherein the step of supporting further comprises:

inserting the center tube through the transition piece before inserting the center tube through the ballast and the end cap; and

inserting the center tube through the ballast before inserting the center tube through the end cap.

Claim 58. (Original) The method of claim 56, further comprising:

a preliminary step of fixing an end plug in a distal end of the center tube; and

connecting the end plug to the end cap.

Claim 59. (Currently amended) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel;

connecting an end cap to a distal end of the barrel; and

fixing an end plug in a distal end of the center tube; and

supporting the barrel assembly on a center tube by:

inserting the center tube through the transition piece, barrel, and the end cap; and

connecting the end plug to the end cap;[[The method of claim 58,]]

wherein the step of connecting the end plug to the end cap comprises interlocking the end plug with the end cap.

Claim 60. (Original) The method of claim 59, wherein the step of interlocking further comprises:

inserting the end plug through the end cap; and

twisting the center tube and end plug approximately ninety degrees.

Claim 61. (Original) The method of claim 59, wherein the step of connecting the end plug to the end cap further comprises securing the end plug in an interlocked position with at least one anti-rotation fitting and at least one set screw.

Claim 62. (Original) The method of claim 59, wherein the step of connecting the end plug to the end cap further comprises securing the end plug in an interlocked position with at least two anti-rotation fittings and at least two set screws.

Claim 63. (Currently amended) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel;

connecting an end cap to a distal end of the barrel; and

fixing an end plug in a distal end of the center tube; and

supporting the barrel assembly on a center tube by:

inserting the center tube through the transition piece, barrel, and the end cap; and

connecting the end plug to the end cap[[The method of claim 58,]]

wherein the step of connecting the end plug to the end cap further comprises:

abutting the end cap on an enlarged head of the end plug; and

holding the end cap and the enlarged head in abutting relation by engaging a proximal end of the barrel assembly with a nut.

Claim 64. (Currently amended) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel;

connecting an end cap to a distal end of the barrel; and

supporting the barrel assembly on a center tube by inserting the center tube through the transition piece, the barrel, and the end cap;[[The method of claim 56,]]

wherein the step of supporting further comprises:

inserting the center tube through the end cap before inserting the center tube through the barrel and the transition piece; and

inserting the center tube through the barrel before inserting the center tube through the transition piece.

Claim 65. (Currently amended) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel; and

connecting an end cap to a distal end of the barrel;

supporting the barrel assembly on a center tube by inserting the center tube through the transition piece, the barrel, and the end cap;[[The method of claim 56, further comprising the steps of:]]

screwing a nut on a sleeve to hold the transition piece against movement in a proximal direction after the step of supporting; and

connecting a knob at a proximal end of the center tube.

Claim 66. (Currently amended) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

[[The method of claim 56, further comprising the step of]]assembling[[the]] a transition piece from two concentric pieces; [[.]]

connecting the transition piece to a proximate end of a barrel;

connecting an end cap to a distal end of the barrel; and

supporting the barrel assembly on a center tube by inserting the center tube through the transition piece, the barrel, and the end cap.

Claim 67. (New) The reconfigurable ball bat of claim 35, wherein the plurality of barrel assemblies have a predetermined variety of playability characteristics.

Claim 68. (New) The reconfigurable ball bat kit of claim 45, wherein each of the plurality of barrel assemblies has a different playability characteristic from at least another of the barrel assemblies.

Claim 69. (New) A center tube for a ball bat, comprising:

an end plug fixed in an end thereof;

the end plug having a body and a head;

the body being received in an interior of the center tube; and

the head extending axially and radially from the center tube.

Claim 70. (New) A method of using a reconfigurable ball bat, the bat having:

a center tube and a barrel assembly removably mounted on the center tube, the barrel assembly comprising a transition piece, an end cap, and a barrel;

the method of using the reconfigurable ball bat comprising inserting the center tube knob end first through the barrel assembly; and

supporting the barrel assembly on the center tube.

Claim 71. (New) A method of making a reconfigurable ball bat, the method comprising:

performing preliminary steps of assembling a barrel assembly, the preliminary steps including:

connecting a transition piece to a proximate end of a barrel;

connecting a proximal end of a ballast to an engagement structure of the transition piece;

connecting a distal end of the ballast to a engagement structure of an end cap;

and

connecting an end cap to a distal end of the barrel.